

Appl. No. 09/847,357
Amdt. Dated January 15, 2004
Reply to Office action of September 15, 2003
Attorney Docket No. P13442-US2
EUS/J/P/04-3010

REMARKS/ARGUMENTS

Amendments

The Applicants have amended Claims 1, 11, 13 and 17; Claims 10 and 16 have been cancelled. Accordingly, Claims 1-9, 11-15 and 17 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of the foregoing amendments and the following remarks.

Claim Rejections – 35 U.S.C. § 102(e)

The Examiner rejected Claims 1-3 and 13-14 under 35 U.S.C. 102(e) as being anticipated by United States Patent No. 6,014,102 A issued to Mitzlaff *et al.* (hereinafter Mitzlaff). The Applicant respectfully traverses the rejection of these claims.

Mitzlaff appears to disclose a method and apparatus for calibrating location-finding equipment (LFE) within a communication system. In the method disclosed by the Mitzlaff reference, error vectors are added to the position estimates determined by LFE to provide a corrected position estimate. The vectors are generated using calibration terminals, which move through the communications system's coverage area. The calibration terminals are periodically polled for the terminals actual independently determined location. Additionally, the terminals periodically broadcast a known sequence utilize by the LFE in determining a position estimate of the calibration terminal. The difference between the actual and LFE determined position estimates are utilized in calculation of error vectors.

Claim 1 of the present invention is amended to include the limitations of Claim 10. Amended Claim 1 defines a method for determining the position of a mobile station utilizing calibrations based on estimated positions and a plurality of measurements. The Applicants respectfully direct the Examiner to amended Claim 1.

1. (Original) A method for determining the position of a mobile station within a telecommunications system, the method comprising the steps of:
 - performing a plurality of measurements associated with a plurality of mobile stations;
 - estimating the position of the plurality of mobile stations based on said plurality of measurements, assuming no bias;

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creating calibration parameters based on the estimated positions and said plurality of measurements, wherein said step of creating calibration parameters further comprises:

deriving a first order approximation of the mobile station positions as a function of bias error; and

estimating the bias error using the first order approximation equation; and

refining the estimated positions of the plurality of mobile stations based on the plurality of measurements associated with the mobile stations and said estimated calibration parameters. (emphasis added)

The Applicants respectfully assert that the above emphasized limitations are not taught or suggested in the Mitzlaff reference.

The method of the present invention for determining mobile station position accounts for bias errors in relevant positioning parameters by performing a plurality of measurements, assuming no bias, associated with a plurality of mobile stations. Calibration parameters are created based on both the plurality of measurements and estimated mobile station positions. The estimated position of the mobiles is then updated using the estimated calibration parameters. The Mitzlaff reference at least fails to disclose the element of assuming no bias while estimating positions. Further, the error vectors discussed in Mitzlaff are calculated based on first and second location values whereas, the Applicants' invention uses a first order approximation of the mobile station position as a function of bias error. This being the case, amended Claim 1 is not anticipated and is patentable over Mitzlaff. Depending Claims 2 and 3, contain the same limitations as Claim 1 and are thus patentable over Mitzlaff.

As between Claim 1 and the Mitzlaff reference, the Applicants submit that amended, independent Claim 13 contains limitations analogous to those found in Claim 1. For the above given reasons the Applicants respectfully submit that Claim 13 and dependent claim 14 are patentable over Mitzlaff.

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Claim Rejections – 35 U.S.C. § 103 (a)

Claim 5 is rejected under 35. U.S.C § 103(a) as being unpatentable over Mitzlaff in view of Wylie *et al.* (US 5,974,329 A) (hereinafter, Wylie). The Applicants respectfully traverse the rejection of this claim and submit that Claim 5 is patentable over the art of record.

Wylie appears to recite a method for correcting ranging errors associated with non-line of sight (NLOS) base stations. Line of sight (LOS) measurements are reconstructed and are used to correct the NLOS ranging errors. Wylie's method is utilizes measurements associated with specific (NLOS) base stations, whereas bias error measurements in the Applicants' invention are made between any base stations that are in communication with the mobile station. The Applicants respectfully submit that Claim 5 is patentable over Mitzlaff in view of Wylie for at least the above reasons.

Claim 6 is rejected under 35. U.S.C § 103(a) as being unpatentable over Mitzlaff in view of Hall *et al.* (US 6,424,837 B1). The Applicants respectfully submit that Claim 6 is patentable over the art of record for at least the reasons recited above with respect to Claims 1 and 13.

Claims 4 and 7-9 are rejected under 35. U.S.C § 103(a) as being unpatentable over Mitzlaff in view of Wimbush (US 4,494,119) (hereinafter, Wimbush). The Applicants respectfully traverse the rejection of these claims and submit that Claims 4 and 7-9 are patentable over Mitzlaff in view of Wimbush and a combination of Mitzlaff and Wimbush, for the reasons recited above with respect to Claims 1 and 13.

Claims 10-12 and 15-17 stand rejected under 35 U.S.C § 103(a) as being unpatentable over Mitzlaff in view of Ffoulkes-Jones (US 6,128,501 A). Claims 10 and 16 have been canceled and the limitations in these claims have been incorporated in Claims 1 and 13 respectively. The rejection of Claims 10 and 16 are now moot and the Applicants respectfully traverse the rejection of Claims 11-12, 15 and 17.

Ffoulkes-Jones was cited for teaching limitations lacking from the Mitzlaff reference including: estimating the position of a mobile station assuming no biases, deriving a first order approximation and estimating biases and refining the estimated mobile station position. In the Official Action, a correspondence is drawn between this

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19). However, Applicants have reviewed this cited portion of Ffoulkes-Jones and find no reference to estimating biases using the approximation equation, nor does the cited portion discuss refining the mobile station position using the bias estimation. Instead, the cited portion of Ffoulkes-Jones appears to disclose a position determining system for a mobile station coupled to a local satellite receiver. Base station satellite data is transmitted to the mobile unit including data representing a carrier phase measurement derived from a satellite signal. The mobile unit determines its position relative to the base station using the base station satellite data. It is respectfully submitted that Ffoulkes-Jones does not address the above-identified deficiencies of Mitzlaff with respect to Applicant's invention. Further, Claims 11, 15 and 17 depend from Claims 1 and 13 respectively and contain the same novel features as Claims 1 and 13.

Claim 12 contains limitations analogous to those found in Claims 1 and 13. For the above given reasons the Applicants respectfully submit that Claim 12 is patentable over the Mitzlaff and Ffoulkes-Jones references.

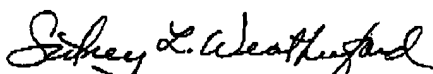
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CONCLUSION

In view of the foregoing remarks, the Applicants believe all of the claims currently pending in the Application to be in a condition for allowance. The Applicant, therefore, respectfully requests that the Examiner withdraw all rejections and issue a Notice of Allowance for Claims 1-9, 11-15 and 17.

The Applicants request a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,



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